



Finding the Lost Monastery: Reconstructions of the Monastery of Madre de Deus

MIEH (Modelação de Informação de Edifícios) – HBIM (Historic Building Information Modelling)
IST Architecture 5th year Integrated Master's Course 2021-2022

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Background image: point cloud of the actual monastery superimposed over plan of the Monastery of Madre de Deus, authored by José Maria Nepomuceno, architect, 19th Century

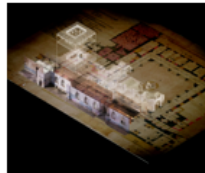
After learning basic modelling practices from point cloud data in Revit, students will be divided into several team projects tasked to reveal mysteries about the primitive nucleus of this former monastery. Superseding the scope of common Historic Building Information Modelling (HBIM) practices, the aim of this course is about discovery.

What can this form of digital reconstruction contribute to revealing complex architectural histories? How can we represent our speculations of both the possible and impossible? How can our findings be communicated to diverse publics in engaging ways?

Using hybrid research materials such as paintings, texts, photographs, historic drawings, point cloud data and conversations with experts, we hope to answer some of these questions as we reconstruct the tangible and intangible fragments of the building's history.



Exercise 1 - Individual
Essential Training – HBIM modeling



Exercise 2 - Groups
Main exercise – research / discovery / speculative / creative / hypothesis / communication

Portfolio Development

Exhibition

An overview of frequently used keywords in the context of HBIM.

Keywords

An overview of frequently used keywords in the context of HBIM.

1 reading
Reading: Keywords Preview

Project Setup

These video tutorials outline the initial steps of setting up a new HBIM project based on point cloud data. The first video will show how to import point cloud data as well as how to orient the project to facilitate modelling. The Recap video explains how to segment point cloud data into individual files to facilitate modelling.

2 videos
Video: Project Setup Preview
Video: Recap Preview

Floor

This video tutorial outlines basic options for modelling floors to point cloud data including floors with slanted surfaces, custom floor nosings and procedures to join floor levels.

1 video
Video: Floor Preview

3 videos

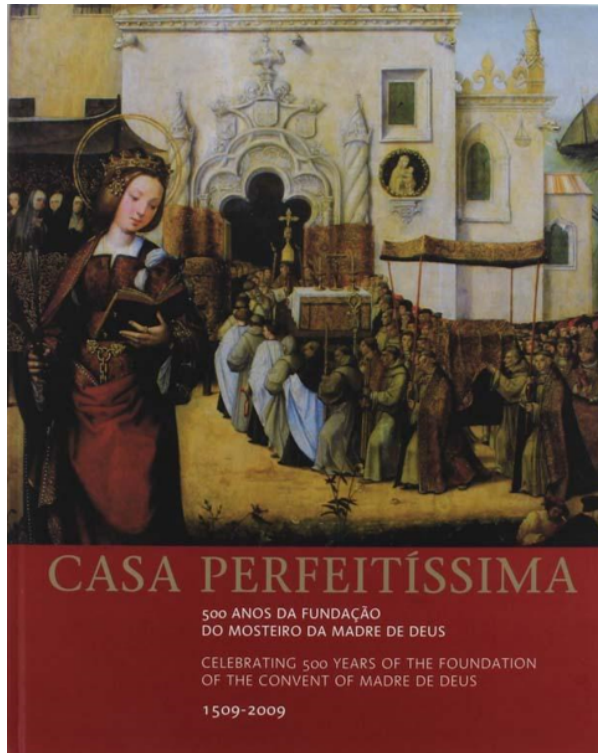
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HBIM – Basics

Floor

HBIM: Nivel Básico | Basic Level
IPTI
Pavimentos | Floors

▶ 0:00 / 6:20



- 1 Entrance Door (1)
- 2 Primitive Church – Hypothesis 1 (4)
- 3 Primitive Church – Hypothesis 2 (3)
- 4 The Arab Room (2)
- 5 Modelling the plans of Nepomuceno (2)
- 6 Modelling the building As-Found (7)
- 7 The Low Choir (2)
- 8 3D Printed Chronology Models (2)







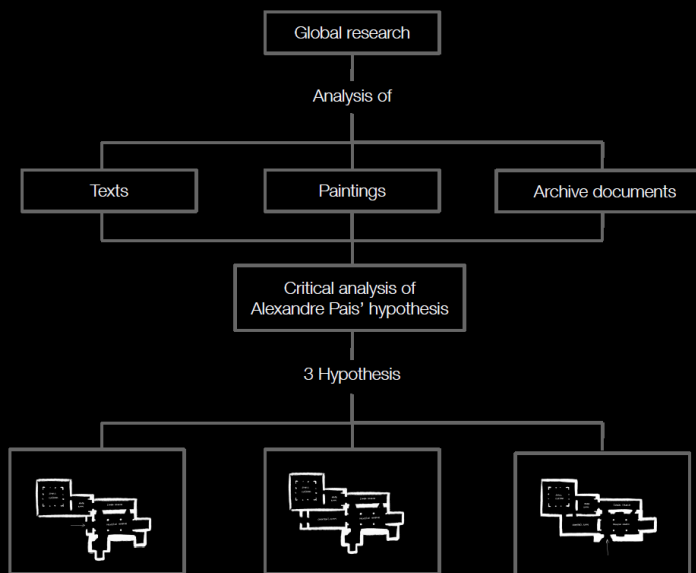
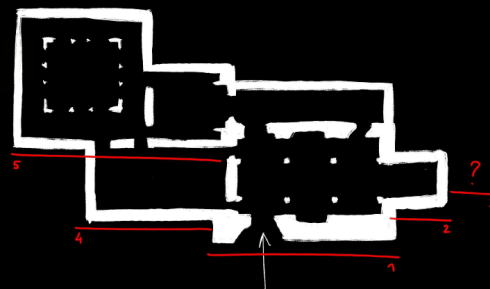




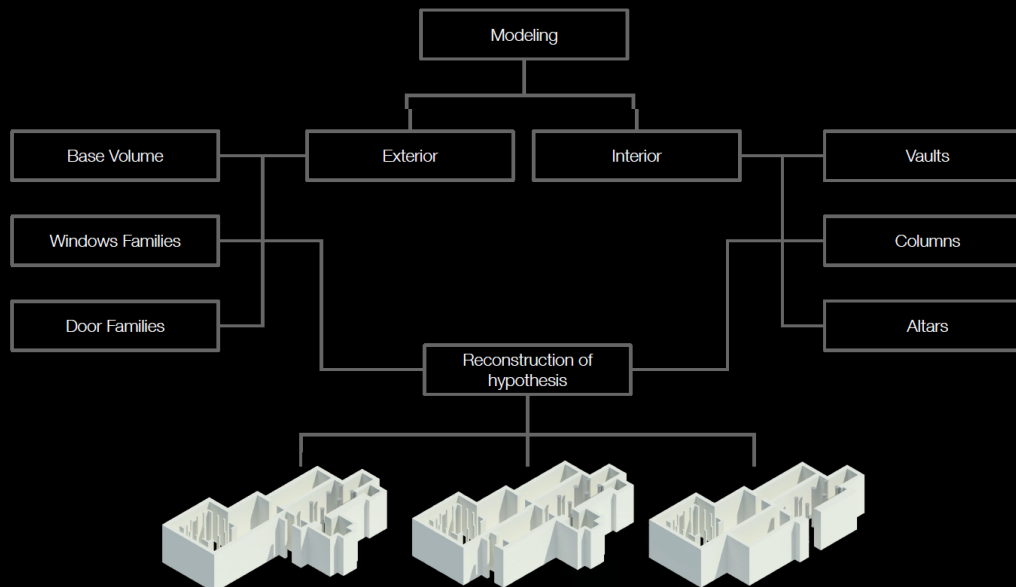
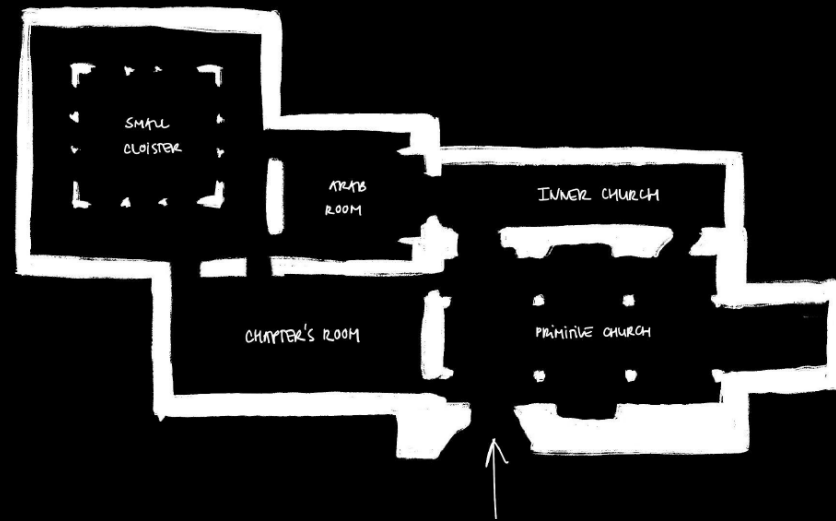
Student Work - Primitive Church - Hypothesis 1 - Beatriz Fabião, Laura Guia, Mariana Alves. Ricardo Aparício



Chegada das Relíquias de Santa Auta



Student Work - Primitive Church - Hypothesis 1 - Beatriz Fabião, Laura Guia, Mariana Alves. Ricardo Aparício



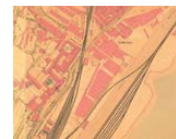
Student Work - Primitive Church - Hypothesis 2 - Beatriz Santana, Bryan Rodrigues, Inês Almeida



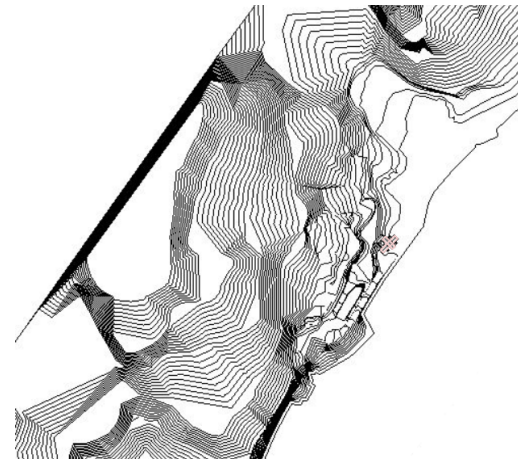
Manuscript illustration of a church interior, likely from a 15th-century manuscript.



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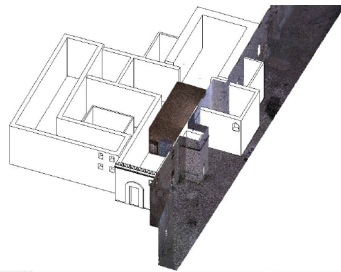
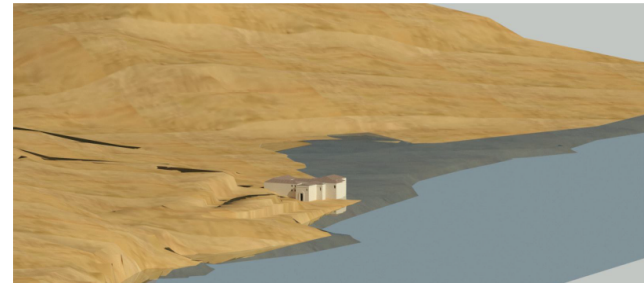
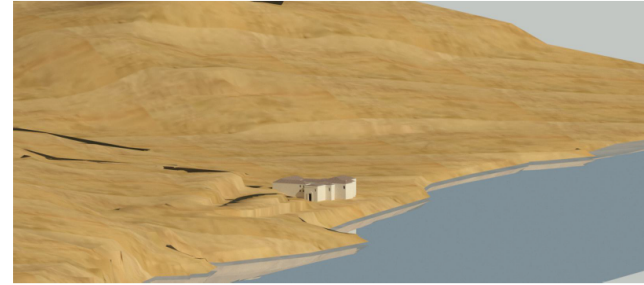
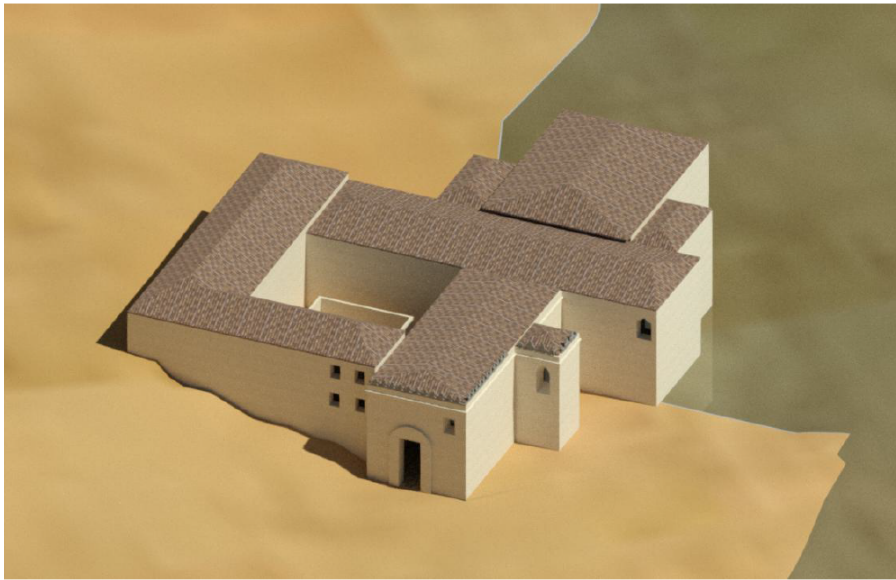
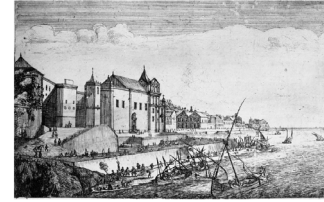


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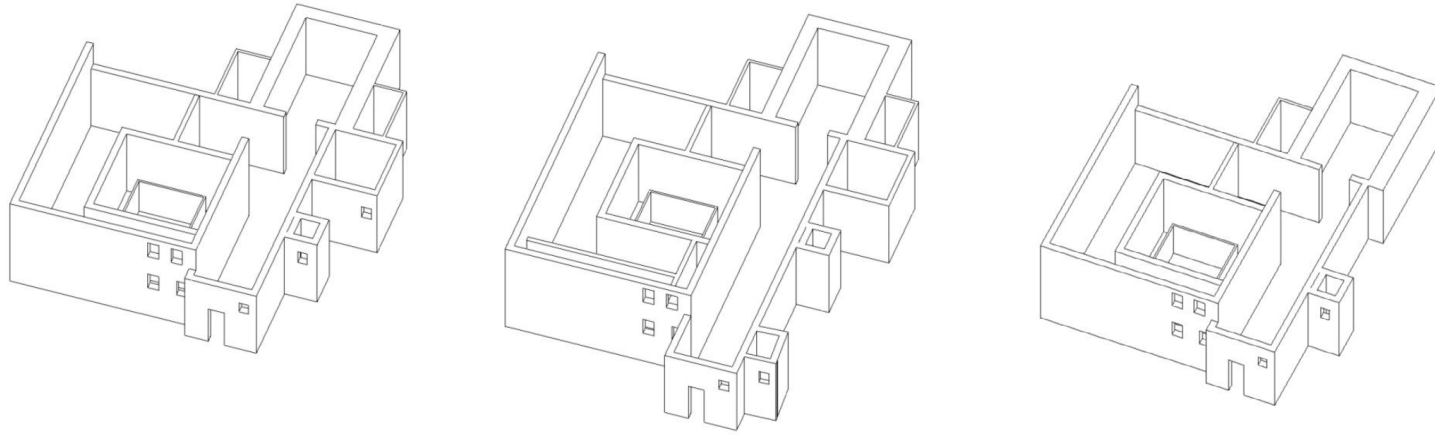
Translation of historic sources into digital reconstructions

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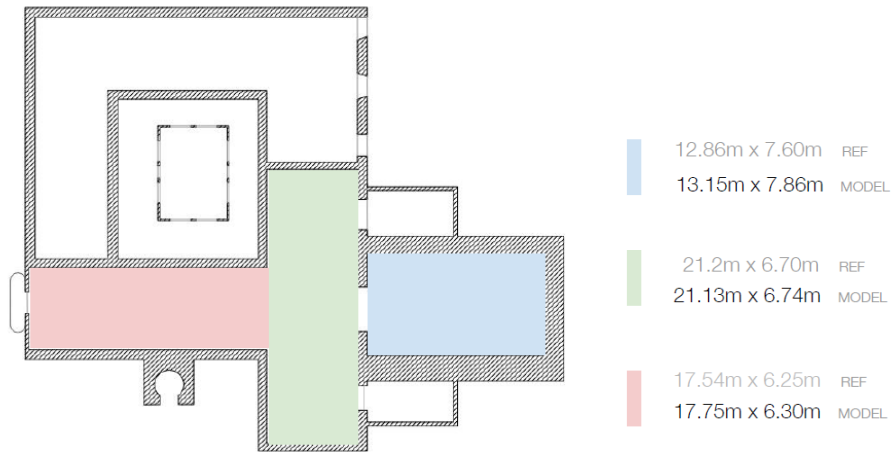


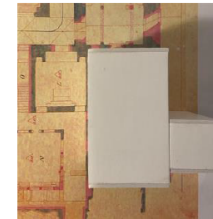
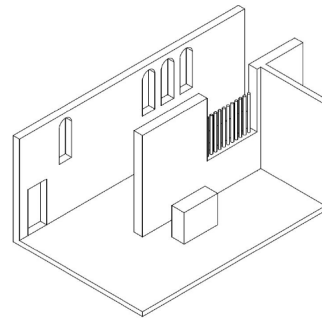
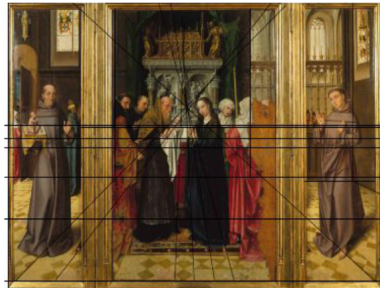
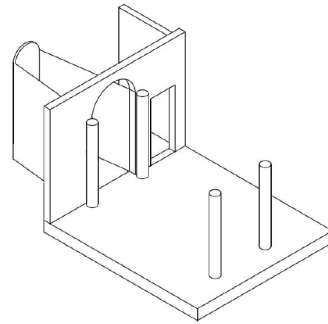
Adjusting reconstruction hypothesis to historic sources and point clouds

Student Work - Primitive Church - Hypothesis 2 - Beatriz Santana, Bryan Rodrigues, Inês Almeida



Three hypotheses resulting from the analysis of diverse data



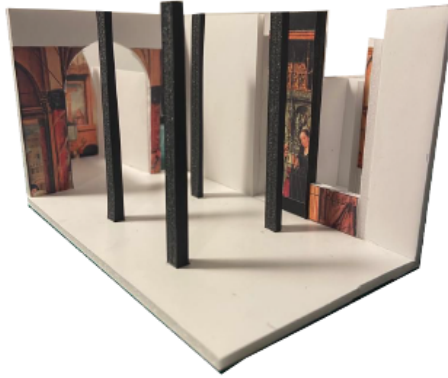


De-constructing historic perspectives and cross-referencing textual sources for the interior and exterior of the 16th century church

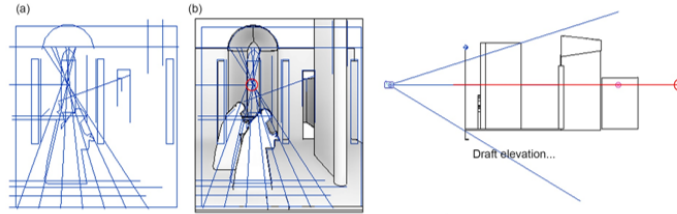
"(...) in that house they will build a Church that must be thirty-three spans wide [7.26m] and fifty-six spans long [12.32m] because the Mother of God has so much, and the lady wants it from that greatness. The church will have a chapel twenty spans wide [4.40m] and twenty-one spans long [4.62m] that will be the head and will be all the height of the mother of god and the altars will have the its steps like the altars of the mother of god."

CARVALHO, Maria João Vilhena de - "Imagens milagrosas...". In Igreja da Madre de Deus, 2002, p. 76, nota 3

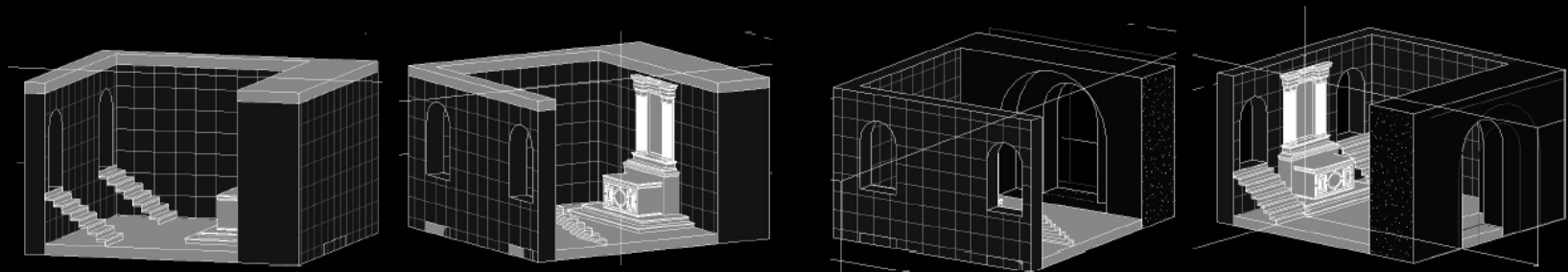
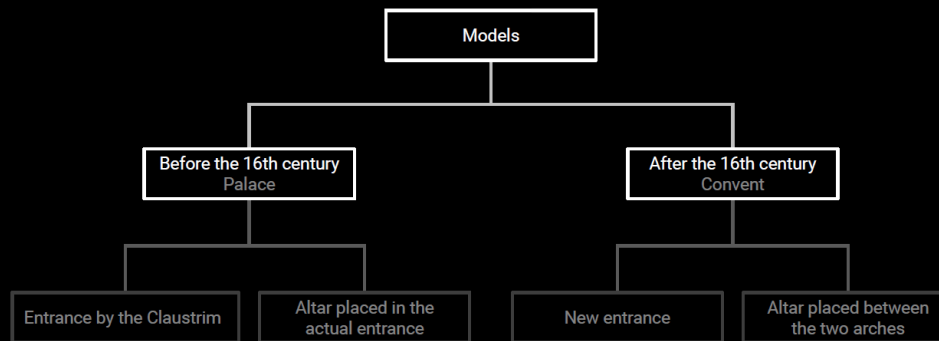
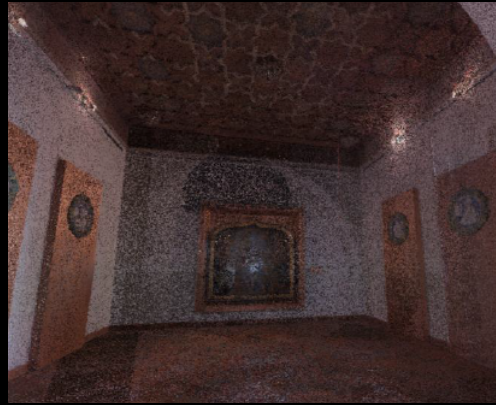
Student Work - Primitive Church - Hypothesis 3 - Lucas Mendoza

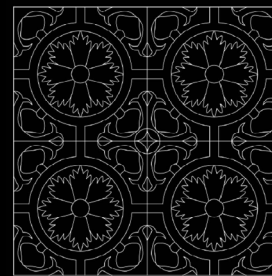
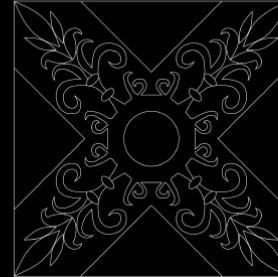
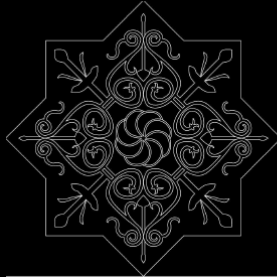


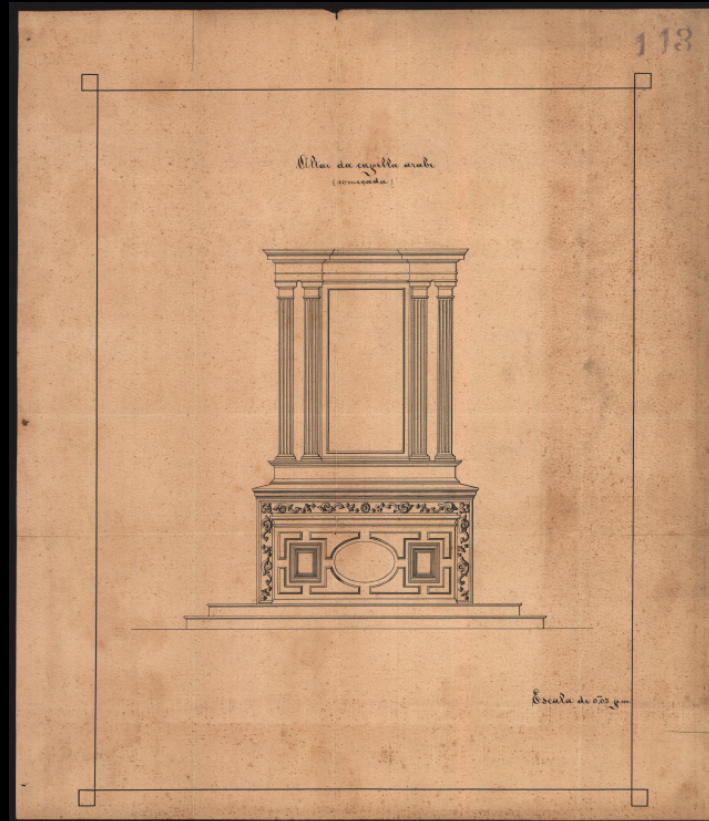
The lines were drawn on a flat plane (a) and the scene modelled behind (b) according to the perspective lines.



Consolidating sources into a single proposal for the 16th century church

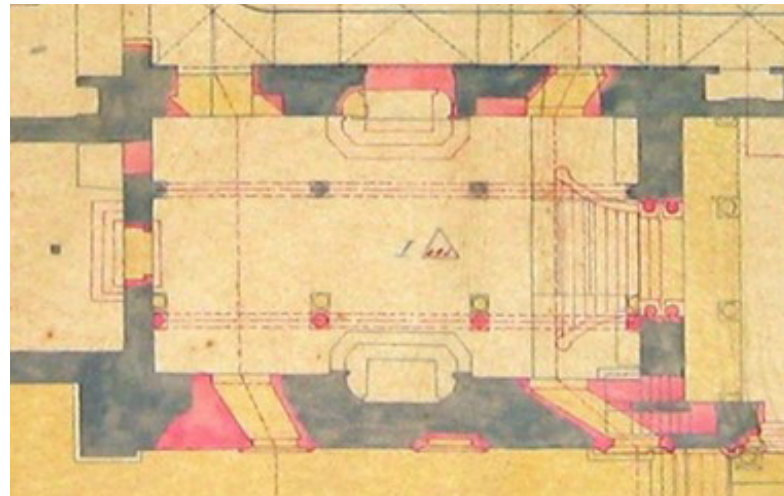
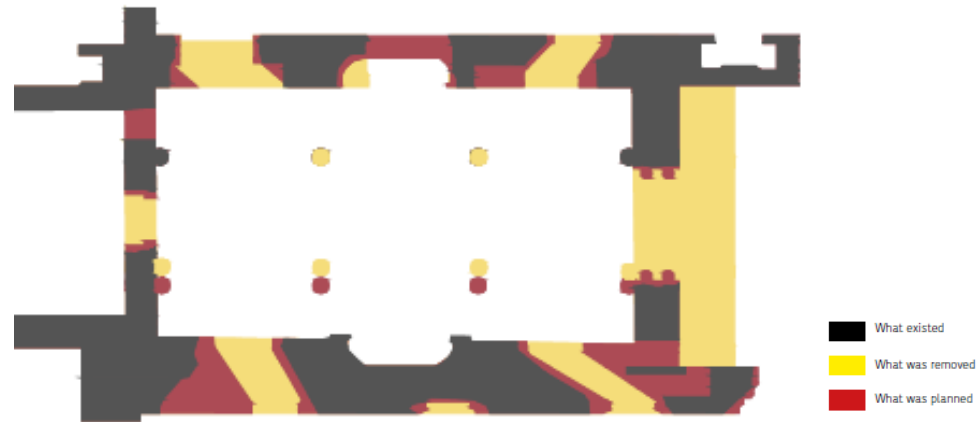




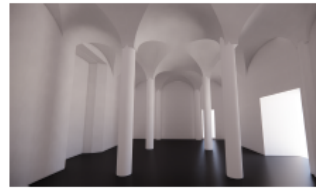
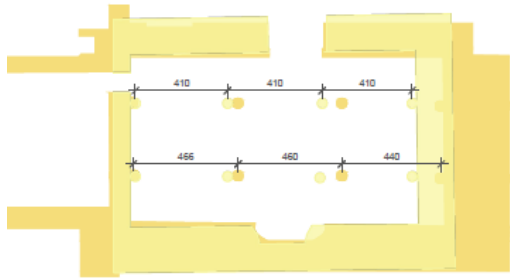


Reconstructing the lost altar and 16th century atmosphere of the Arab Room

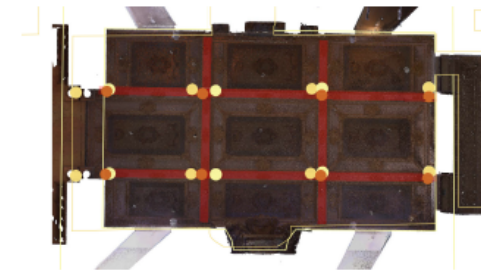
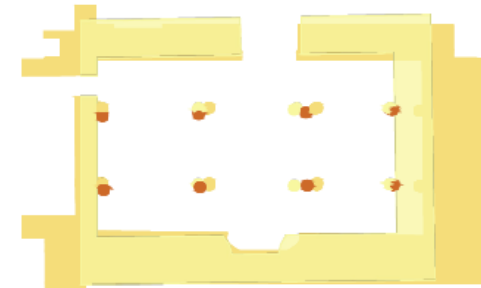
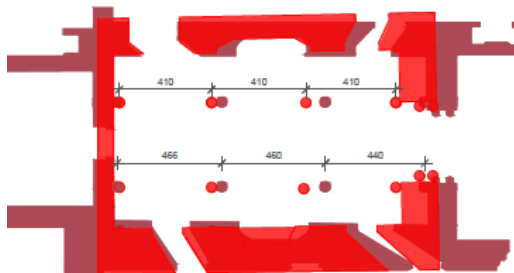
Student Work - Low Choir - Jolanta Krzywdzinska, Emeline Gallais



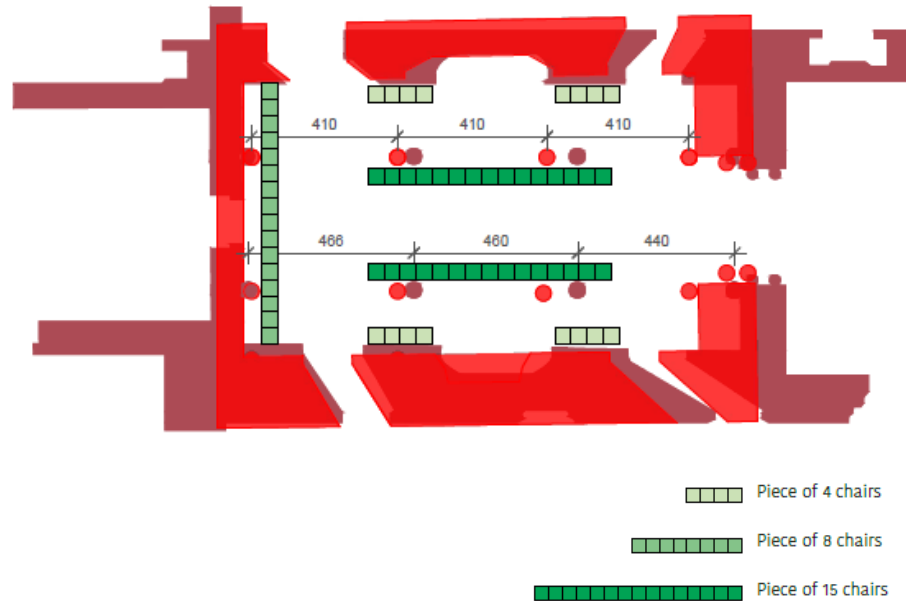
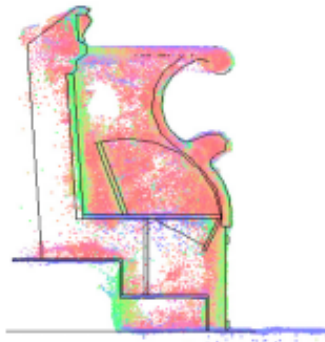
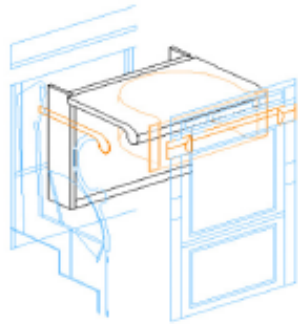
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Exploring hypotheses of a vaulted ceiling in the lower choir before and after 19th century renovation works



Point clouds of the ceiling in the space today used to speculate the original column locations



Reconstructing and repositioning the choir seating from the high choir to their original location in the low choir

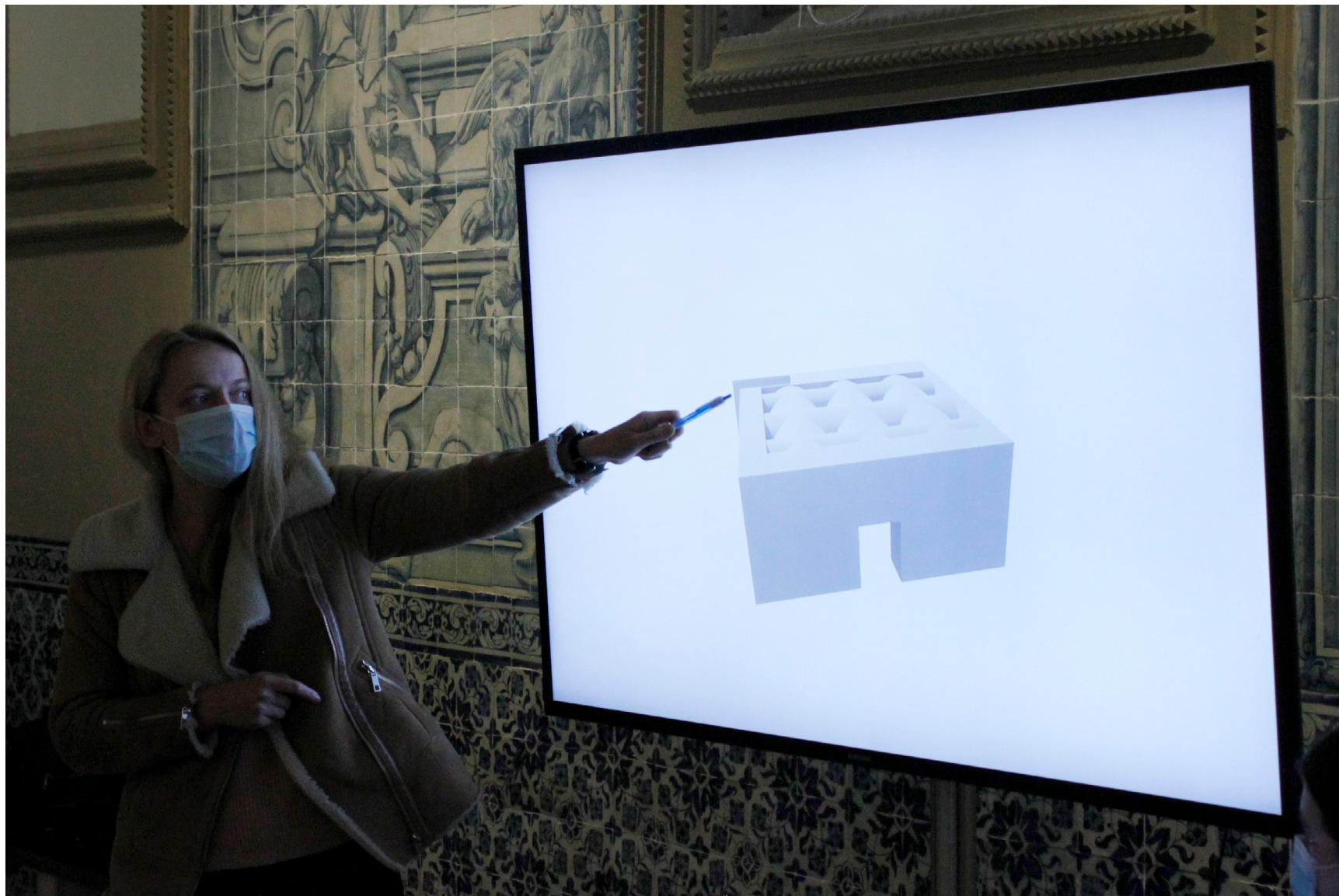


Reconstructing the 17th century facade based on the analysis of consistent architectural elements observed across historic records from the 16th - 19th century









“Reason begins when discourses organized with the goal of being right cease, [...] an equality in act, verified, at each step by those marchers who, in their constant attention to themselves and in their endless revolving around the truth, find the right sentences to make themselves understood by others.”

Jaques Rancière, *The Ignorant Schoolmaster: Five Lessons in Intellectual Emancipation*, 1987



Throughout the five month course, a digital model of the 16th century is being developed in parallel to the discoveries made by students, conversations with specialists and the historical research carried out by Dr. Pais.